

Validation of Innovative Behavior as A Multidimensional Construct

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Abstract. *Innovative behavior (IB) is imperative in ensuring organization innovation succeed but the measurement of IB is still at an evolutionary stage. Most literature treats IB as a single construct, ignoring its multidimensionality. Drawing from studies that indicating IB as a multidimensional, this study empirically examines and validates the dimensionality of IB construct and suggests a refined angle in seeing the process of individual innovation. Paper based and online survey completed by 211 employees from six industries in Indonesia and analyzed using confirmatory factor analysis (CFA) and structural equation modeling (SEM). Findings demonstrating initial supports that IB can be considered as a multidimensional, as three dimensions model shows a better fit model than two and single model. It may suggest IB dimensions can be seen overlapped each other, not only as different stages as commonly understood. Convergent and discriminant validity were evidenced, consistent with previous study. Managerial and theoretical implications in managing individual innovation, including the future research directions are also discussed.*

Keywords: *Innovative behavior, multidimensional construct, convergent, divergent validity, structural equation modeling*

Abstrak. *Perilaku inovatif (PI) penting dalam memastikan kesuksesan inovasi organisasi namun pengukuran PI masih belum berkembang. Kebanyakan literatur menganggap PI sebagai konstruk tunggal, bukan sebagai multidimensional. Berdasarkan studi-studi yang mengindikasikan bahwa PI adalah multidimensi, studi ini secara empirik menganalisa dan memvalidasi dimensionalitas konstruk PI dan menyarankan perspektif baru dalam melihat proses inovasi individu. Survei dilakukan secara manual dan online pada 211 karyawan dari enam industri di Indonesia dan dianalisa dengan menggunakan confirmatory factor analysis (CFA) dan structural equation modelling (SEM). Temuan studi ini menunjukkan dukungan awal yang mendukung bahwa PI bisa dianggap sebagai konstruk multidimensi, karena model dengan tiga dimensi menunjukkan model fit yang lebih baik ketimbang model dengan dua dan satu dimensi. Ini menunjukkan bahwa dimensi IB bisa saja saling tumpang tindih, tidak hanya sebagai tahap yang berbeda seperti selama ini dipahami. Analisis validitas convergent dan discriminant yang dilakukan konsisten dengan studi-studi terdahulu. Implikasi manajerial dan teoretikal dalam mengelola inovasi individu, termasuk arah studi masa depan juga didiskusikan.*

Kata kunci: *Perilaku inovatif, konstruk multi-dimensi, convergent, validitas divergen, structural equation modeling*

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1. Introduction

Innovative behavior (IB) is considered as a key factor to promote innovation in organization so that it measures seen significant to both practitioners and academics. In measuring IB, most studies refer to process approach, that consist of two main elements: ideation and implementation (Axtell et al., 2000). Many perspectives are a variation of this, such as the concept and three dimensions measurement from Scott and Bruce (1994). By drawing to Kanter (1988b), both researchers suggest scale of measurement of IB consists of three main process; Idea generation, promotion and implementation. The three stages cover the complex activities relate to searching and acquiring new ideas, pursuing support from colleague and supervisors, and applying the ideas in organization. Despite Scott and Bruce's (1994) did not report the scale development method in detail, many works adopted the measurement. For instance, Janssen (2000, 2004) who adopting Scott and Bruce scale from 6 to 9 items, despite still use three dimensions. Likewise, Pieterse et al (2009) also use the similar scale but with linguistic modifications on it's measurement items.

While many studies follow IB concept from Scot and Bruce (1994), none of these evaluated or examined as well as reported the dimensionality. Most studies consider that the construct of IB is uni-dimensional as its development study suggest. On the other side, some studies propose that the construct of IB could be a multi-dimensional. For example, Kleysen and Street (2001) suggest that IB is a five dimensions construct. Basically, most of the ideas are relevant to Scott a Bruce (1994), except the dimension of idea generation is categorized by three separated activities. Kleysen and Street (2001) posit that IB is a multidimensional with the main argument that IB is a more complex and rich concept where a uni-dimensional construct could not capture properly. They drew Kirton's adaption-inventory (Kirton, 1976) which showing the complexity and the different of cognitive style

between solving the problem and redesign problem's framework. De Jong and den Hartog (2010) also suggest multidimensional IB. They argue that it is consistent with the work of Kleysen and Street (2001), where: 1) Multi-dimensionality more reflect practical condition, where each steps of the behaviors more dominant than others, 2) Although each of dimension contributes for the whole IB construct, those dimensions are assumed different each other, 3) previous studies are less detail in reporting the scale evaluations procedure. From ten measurement that examined by de Jong and den Hartog (2010), nine of them failed to report or did not include the validation test. Both Hinkin (1998), Netemeyer (2003) as well as De Vellis (2003) suggest the scale of measure should be continually validated to show the stability of the measurement.

This study contributes on literature by exploring dimensions of IB in the context of organizations in Indonesia. Most of the constructs and scale of measurement of IB assume that IB is a uni-dimension whereas at in the practices there are indications that IB is a multi-dimension and further study is needed to clarify. How are dimensionalities of IB's construct and how each of dimensions overlapped and provides unique contribution need to be clarified These understandings will help researchers and practitioners managing the interventions that more relevant for the development of IB. The context of the study enriches managing innovation literature since most studies refer to the western world context.

2. Hypothesis Development

Great deal of literatures assert that organizational innovation is imperative for effectiveness and sustainability of organization (Janssen, 2004; Morris, Kuratko, & Covin, 2008; Wolcott & Lippitz, 2010), and individual innovation is it's foundation. Studies focusing on individual level innovation argue organizational level innovation counts on individual level. (de Jong & den Hartog, 2007; Scott & Bruce, 1994; West & Farr, 1990).

There have been several models developed to explain the antecedents, the process or the outcomes of innovations. For instance, one widely accepted model is King's (1990) that suggests three approaches in explaining individual innovation; traits, situations influence, facilitators and inhibitors. Other researcher, such as Axtell et al (2000) uses perspective process to describe individual innovation, where the main phase are initiations and implementations ideas. The present study following this, where activities and characteristics of IB could be explained more detail. Relate to the activities, West and Farr (1990, p. 16) propose the term "individual work behavior" as "the intentional creation, introduction and application of new ideas within a work role, group or organization, to benefit the role performance of the group or the organization." This study follows this broad definition.

Many next innovation studies adopting the West and Farr's definition above, such as de Jong and den Hartog (2007, p. 43) who provide additional elements. They argue that new things are not limited only about product, but are also about process and procedures. Other researchers, Carmelli, Meiter and Weisberg (2006) integrate relevant theories to show similar pattern on innovation activities, and provide emphasizing on multi-process of IB. Consistent with this, this study follows West and Farr (1990) constructs, that IB characterizes activities relate to generating, promoting and implementing new useful ideas for organization.

Idea generation arises when individuals face problems, incongruities, or discontinuities in their daily work (Janssen, Vliert, & West, 2004). It is often associated with creativity process (Janssen et al., 2004; Scott & Bruce, 1994). Generation of idea also relates to the intentionally attempts in exploring opportunities to generate new ideas (Kanter, 1988b). By carefully examine this idea generation stage, Kleysen and Street (2001) suggest that creating ideas consist of three elements: opportunity exploration, "*generativity*" and formative investigation.

The latter is consistent with Hamel's (2007) idea where sometimes new ideas are still ambiguous and need to be evaluated through experiment before promoted. Promoting ideas relates to individuals attempt to convince colleagues and supervisor for ideas proposed. Innovator persuade, influence, and negotiate on capitalizing the resources needed so that researchers coin the term "championing" for the process (de Jong & den Hartog, 2010, p. 24; Kleysen & Street, 2001, p. 285). Innovations attempts could be hardly succeed if not get sufficient political support, both from colleagues or supervisors, especially when there is resistency from idea user. Innovator approach to those who have relevant authority is crucial in this stage, particularly when the new ideas is complex. The more complex the ideas, the more various supports needed from supervisors (Damanpour & Scheider, 2008).

If succeed with promoting ideas, in the next stage individu should implement the ideas on relevan departments in organization. Innovators often had to modify the ideas, in such away and make it as a system that become routine practices (Kleysen & Street, 2001). On this stage, the support from other, especially powerful and authoritative is still very important. (Klein, Conn, & Sorra, 1996; Sawang & Unsworth, 2011). Innovator commitment to convincing on the benefit of innovation is needed.

Considering on concepts, activities and events relate to IB, researchers tend to assume that scale of measurement for IB is a uni-dimension, consistent to widely accepted scale from the seminal work of Scott and Bruce (1994). This scale is often used by other researches in order to develop uni-dimension scale like from Bunce and West (1995), Basu and Green (1997), Janssen (2000) or Reuvers et al. (2008). However, none of these studies analyze dimensionality of the scale that they developed. De Jong and den Hartog's (2010) work on five studies that using uni-dimension IB scale also found that none of the studies analyze the dimensions of IB.

Only Scott and Bruce (1994) evaluate the correlation strength and by that argue that IB is a uni-dimensional. Furthermore, these studies do not report the psychometric properties of the IB scale and none of these aim to validate the dimensionality. Meanwhile, literatures (i.e. Hinkin, 1998; Netemeyer et al., 2003) recommend to cross validation step to ensure the stability of a scale used.

Although studies maintain considering IB as a uni-dimensional, this could potentially undermine or underutilize the richness of IB characteristics, and tap the more wide spectrum of IB characteristics. This further limiting its benefit to further research or practical use in organization. For those reasons, studies such as Kleysen and Street (2001), de Jong and den Hartog (2010), as well as Dorensbosch et al. (2005a) examine and assume that IB is a multi-dimensional.

However, the researcher attempts in order to claim that IB is a multidimensional is lack of evidence. Two dimensional model that proposed by Dorensbosch et al. (2005a) shows the expected factor analysis results, they do not do the *Confirmatory Factor Analysis (CFA)* with *Structural Equation Modelling (SEM)*. Five dimensions model of IB suggested by Kleysen and Street (2001) does not show the congruity between data and model. Both researcher argue that items developed for the scale showing multi-dimensional of IB. This is also the case for four model IB scale of measurement from de Jong and den Hartog (2010). Despite this model shows a better fit between model and the data, the difference analysis between it's dimensions showing a weak evidence.

IB is considered a uni-dimensional construct for most of studies, but the indications that it could be a multi-dimensional from some studies are occurred. This study aims to do further evaluation needed to clarify the different conceptual indicated. It hypothesizes that innovative behavior could be considered as a multidimensional.

3. Research Method

Survey with non-probabilistic purposive sampling is used in this study as it needs specific characteristics from the participants (Saunders, Lewis, & Thornhill, 2003). Participants were from higher education, financing, shipping, media, infrastructure, and telecommunication industry. The last three are chose due to high potential of growth in the future. The growth of the industry is assumed reflecting the requirement to be innovative for the employees.

From two months paper based survey, participants were from five organizations - two in shipping, two in financing – and one in higher education institution. Two hundred and fifty questionnaire were distributed but only 140 responses (56%) were valid. This response is considered as good as managers commonly unenthusiastic to response anonymous survey (Baruch & Holtom, 2008). From online mode, participants were the member of three mailing lists: One from a graduate school of management, two from human resources management professional mailing lists. Total members from this mailing lists is around 24 thousands. Qualtric software was used for this survey where questionnaire format is identical with the paper based. One hundred and twelve responses were acquired however, only 71 were valid.

Total valid questionnaires are 211 and this appropriate for the purpose of confirmatory factor analysis as literature suggest (Field, 2009; Hinkin, 1998; MacCallum, Widaman, Zhang, & Hong, 1999). The summary of participants characteristics are shown in table 1.

Tabel 1. Participants Characteristics

Variable	Category	Percentage (n=211)
Gender	Male	70.1
	Female	29.9
Age	<30	11.8
	30–40	71.1
	41–50	17.1
	>50	0
Industry	Telecommunication	10.9
	Media	2.8
	Infrastructure	19.9
	Other (Higher education, shipping, financing)	66.4
Department	Marketing	17.5
	Finance	8.5
	Operation	29.4
	Human resources	24.2
	Other	20.4
Tenure	< 2 yrs	31
	2 – 5 yrs	81
	5 – 8 yrs	65
	> 8 yrs	34

This study also examines several attributes that are commonly considered as control variables in innovation study such as age (Binnewies, Ohly, & Niessen, 2008; Erez & Naveh, 2004), gender (Whittington & Smith-Doerr, 2005), tenure, industry and job category (Choi & Chang, 2009; Erez & Naveh, 2004; Landry, Amara, & Becheick, 2008).

Measurement

For IB measurement, this study uses Janssen's (2000) scale for two reasons. Firstly, this scale is an extension of the previous important scale which is Kanter (1988b) and Scott and Bruce (1994). Secondly, three dimensions used follows pattern that normally consistent in the uni-dimension scale; idea generation, promotion and implementation. Third, this scale has good psychometric properties in its development, where inter correlation between the three vary between .76 (idea generation and

implementation) to .85 (idea generation and promotion), and Cronbach's alpha .95. For the validity purpose, Amir's (2014) resilience scale of measure is used. Innovative employees are assumed resilient and it is expected that the two variables positively correlated. On its development, this scale shows relatively low average variance extracted (AVE), 0.34 for developmental persistency and .23 for positive emotion. The cronbach Alpha are .63 and .81 consecutively.

Analysis

Confirmatory Factor Analysis (CFA) was used to test the hypothesis that innovative behavior is a multidimensional construct. For the purpose of identifying, estimating, and evaluation the model, several procedures are referred (Blunch, 2008; Byrne, 2010) (Kline, 2011, p. 101). Maximum Likelihood (ML) was used using AMOS as ML simultaneously

examine model parameters to maximize the fitness of covariance examined with population hypothesized where in large sample should be unbiased, efficient and consistent (Kline, 2011, p. 155).

Goodness-of-fit was measured with composite indices suggested by Blunch (2008) and Brown (2006). This approach is considered better than single index, particularly with three types of goodness-of-fit: *absolute fit*, *incremental fit* and *parsimonious fit* (Hair, Black, Babin, & Anderson, 2007; Kline, 2011). Fit indices suggested by Kline (1998) and Hu and Bentler (1999) were used: Chi-square (χ^2) test, the Goodness of Fit Index (GFI) and the Root Mean Square Error of Approximation (RMSEA). Additionally, since due to χ^2 test is often considered bias in large sample (Brown, 2006; MacCallum, Browne, & Sugawara, 1996), the χ^2 to degree of freedom ratio (χ^2/df) was also used (Fornell & Larcker, 1981). This approach is considered better in SEM empirical research (Byrne, 2010). The cut-off used was $\chi^2/\text{df} < 5$, GFI > 0.9 , and RMSEA < 0.08 NFI and TLI $< .9$ (Hair et al., 2007).

4. Results

Control variables (gender, age and industry) were checked using independent t-test. It showed there was no different in average score of male participants ($M=49.68$, $SD=4.2$) and female ($M=50.02$, $SD=3.3$), with $t(209)=1.62$ and $p=.52$ two-tail. Similarly, one-way variance analysis showed there was no significantly different statistically in response on innovative behavior according to age ($F(2,208)=.45$, $p=.60$) and industry ($F(3,207)=0.82$, $p=.48$).

Univariate normality test found only two items violated normality (IG2, z skewness=4.2, and II3, z skewness=3.5). These items were still included in further analysis, as Floyd and Widaman (1995) argue that CFA is relatively robust for normality. As for multivariate normality, the results showed responses for innovative behavior normally distributed with skewness $Z=.19$ and kurtosis $z=2.21$, both below the critical value 2.58.

Multivariate normality for resilience scale was also in acceptable range (skewness=0.31, kurtosis=1.25). These results validates the using of Pearson correlation in the analysis.

CFA Results

The likelihood of the parameters were estimated by criteria suggested by Byrne (2010). First, sign and size of parameter checked for its consistency relate to the expected direction. Secondly, standard error for the parameter checked for particularly for the extreme ones (Hu & Bentler, 1999, p. 40). Lastly, the significance of the parameter was checked statistically. For the purpose of parsimony, the insignificant parameters will be dropped (Byrne, 2010). Findings suggested all conditions were satisfied, therefore they indicated the feasibility for the confirmatory model.

Following procedure suggested by Hair et al (2007), and also used by other researcher (i.e Porath, Spreitzer, Gibson, & Garnett, 2012), three “competing model” representing different hypothetical relationships were evaluated. First, a model with all of items loaded to single latent factor of IB. This model reflect scale of measurement suggested by Scott and Bruce (1994), and also Janssen (2000) as a uni-dimensional model (Basu & Green, 1997; Spreitzer, 1995). The second model is a model with two factors consist of idea generation and a combination of idea promotion and implementation. This reflects operationalization of Krause (2004) model, Dorenbosch, van Engen and Verhagen (2005b) model and also of Axtell et al. (2000). Next, model with three factors model where third model seen as a *second-order* latent factor representing the higher-order construct of IB. The factor structure evaluated further concerning the relationship between factors in “first order” (i.e the dimensions of IB), and the contribution that provided by those dimensions for the whole IB construct was evaluated. Then, for the purpose of evaluating the dimensions correlation, measurement model (first-order) was also evaluated.

Table below shows the CFA results of the three models (apart of the three factors first-order model) by using maximum likelihood model. This tabel reports the measurement of *absolute fit* (GFI and RMSEA), *incremental fit measures* (TLI and NFI), and inform of *parsimonious fit* (χ^2/df) measures. The norms used for these evaluation draw from Hair et al. (2007).

The results above describe that the three factor model shows the best goodness-of-fit and the result criteria are consistent with the norms. Two factor model can be considered acceptable, but less goodnes-fit than the three factor.

Table 2. The Summary of CFA Results

Model	Absolute Fit		Incremental Fit		Parsimonious Fit
	GFI (>0.90)	RMSEA (<0.08)	TLI (>0.90)	NFI (>0.90)	X2 / df (<5.0)
One factor	.807	.182	0.360	.497	7,922
Two factor	.827	0.171	.429	.561	7,176
Three factor	.928	.1	.867	.822	3,156

Diagram below shows the three factors model.

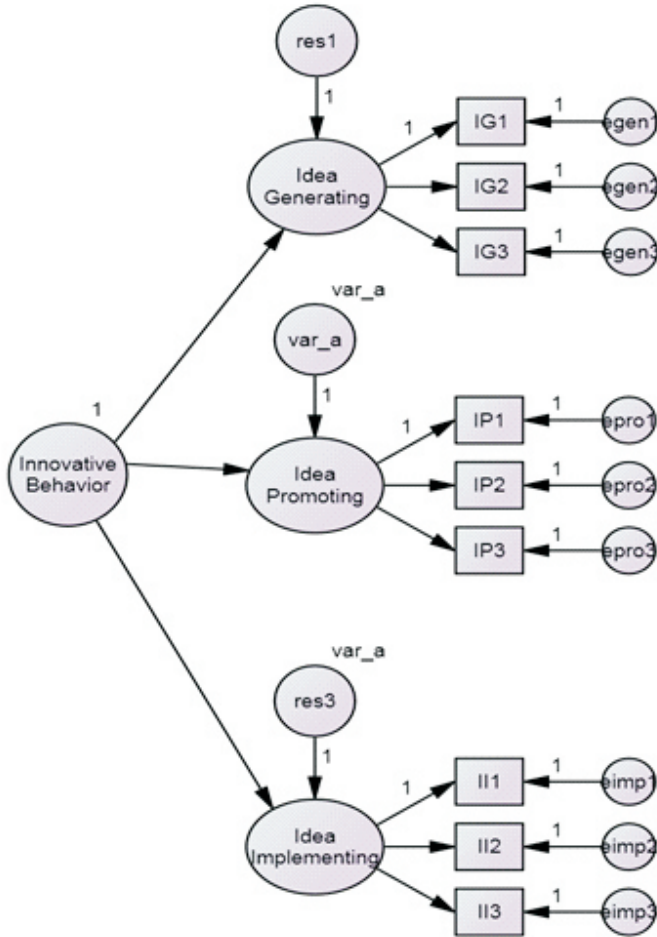


Diagram1. The three factors second-order model of Innovative Behavior

All of the factor loadings show that both first order model and second order model has statistically significant loadings at $p < .001$. Loading factors are evaluated using the norm of Tabachnick and Fidell's (2007, p. 625). Item that has loading factor below .32 indicates poor indicator, .32-.45 good enough, .45-.55 good, and .55-.63 very good, where .71 and more is extraordinary. As for standardized residual value, Byrne (2010) suggests a value of < 2.58 . These findings support the hypothesis that the innovative behavior tend to be a multi-dimensional measure. The relatively low correlation between the three dimensions also indicates that the IB construct is multidimensional. The correlation between idea generation and idea promotion=.39, idea generation and idea implementation=.13, idea promotion and idea implementation=.27.

Above results are consistent with Kleysen and Street's (2001) idea and also de Jong and den Hartog (2010). On the other side, this is different to Janssen's (2000) where suggest it is a uni-dimensional. Besides seeing the indices fit, this study also conduct the χ^2 different test to evaluate which model has a better goodness-of-fit with the data. This test again indicates that the the goodness-of-fit of the three factors model arise significantly compared to the two factor model in fit value. The difference value of $\chi^2(\Delta\chi^2(\Delta D=1)=108)$ is more than the critical value $\chi^2_{cv}=6.63$, $p < .01$. With these results, the multidimensional construct of IB is used for further analysis.

Construct Validity: Convergent and Discriminant Validity

Convergent validity is evaluated by *standard loadings*, *average variance extracted (AVE)* and correlation that indicates construct reliability (Hair, Anderson, Tatham, & Black, 1998). The standardized loadings were generally in acceptable range. Only two items (IG1) and (IP3) that have standardized loadings below .45. The rests were categorized “good” and “very good” (Tabachnick and Fidell, 2007). The details of factor loadings are depicted in table below.

Table 3. Standardized Regression Weights

			Estimate
Idea_Promotion	<---	Innovative_Behavior	.838
Idea_Generation	<---	Innovative_Behavior	.811
Idea_Implementation	<---	Innovative_Behavior	.257
IG1	<---	Idea_Generation	.355
IG2	<---	Idea_Generation	.617
IG3	<---	Idea_Generation	.764
IP1	<---	Idea_Promotion	.840
IP2	<---	Idea_Promotion	.653
IP3	<---	Idea_Promotion	.228
II1	<---	Idea_Implementation	.554
II2	<---	Idea_Implementation	.840
II3	<---	Idea_Implementation	.625

AVE for each dimension is relatively low; .12 for idea generation, and .12 for idea promotion, and .15 for idea implementation. This AVE is below Hair's (2007) suggestion. On the other hand, the construct reliability of innovative behavior is quite good with $> .7$, above Hair et al (1998) suggestion. As for resilience scale, Cronbach Alpha is .73 for developmental persistency and .84 for positive emotion.

For the purpose of concurrent validity, this study test the correlation between innovative behavior and developmental persistency and positive emotion as the subscale of resilience. The results found positive with developmental persistency ($r=.61$, $p < .01$) and positive emotion ($r=.56$, $p < .01$) and this is consistent with the previous study (Amir & Standen, 2012). As for the correlation between developmental persistency and positive emotion also have positive correlation as expected ($r=.43$, $p < .01$). The summary of reliability and correlations analysis results described in the table below.

Table 4. Correlations and Reliability from Scale of Measure

Variables	Mean	SD	1	2	3
1 Innovative behavior	62.46	4.9	(.77)		
2 Develop. Persistency	38.39	3.5	.61	(.73)	
3 Positive emotion	23.86	2.2	.56	.43	(.84)

Note: n=211. Realibility of measures are displayed on the diagonal of the matrix (in parentheses). For all correlations $p < .01$ (two-tailed)

Discriminant validity evaluated by comparing the correlations between three dimensions of IB (idea generation and idea promotion: .39, idea generation and idea implementation: .13, idea promotion and idea implementation: .27) and compared to the squared value of AVE from those three dimensions (.35, .36, and .39). Since the latter higher than the former (except for idea generation and idea promotion), we can considered innovative behavior consist of three different dimensions, as hypothesized and it might be occurred due to participant cultural context (Sireci, Yang, Harter, & Ehrlich, 2006).

5. Discussion

Research on innovative behavior (IB) is imperative in responding today's organizational challenges. This study evaluates dimensionality of the scale of measurement of IB in order to improve our understanding on individual innovation and the effectiveness of existing scale of measures.

Most of IB studies consider that IB is a uni-dimensional, although in the practical level, this behavior is much more complex so that perspective that it is a multidimensional is arose. Kleysen and Street (2001) also de Jong and den Hartog (2010) has tried to suggest despite the empiric evidences did not fully support the perspective. The present study advances these efforts with the context of Indonesian professional. Using the Janssen's (2000) scale, this study suggests that the main dimension of IB: *idea generation*, *idea promotion* and *idea implementation* are different each other. CFA results by evaluating three types of good fit; absolute, incremental and parsimonious fit justifies the differentiation and shows that three factor model is the better-fit model.

These results is consistent with the perspective that IB encompasses behavior with distinctive pattern and different each other. Despite there are correlations between the dimensions, three stages of innovation reflected by the dimensions are discrete.

In the real business world, innovation practices are often characterized by reciprocal and overlapped stages (Anderson, De Drea, & Nijstad, 2004; Kanter, 1988b). The discussion section below clarifies two main arguments. First, it details the analysis of IB dimensions, their complexity and the distinction each other. Secondly, we need to consider new perspective such as the combination of the perspective of uni-dimensional and multi-dimensional, relevant with Scott and Henderson's (1994, p. 582) and therefore will be discussed.

The Complexity of Idea Generation

The idea generation stage is actually more complex than merely producing ideas. As suggested by Kleysen dan Street, this stage may involve exploring the opportunities with curiosity (Kleysen & Street, 2001), forcing oneself to gain a new ideas from new sources. One skill that makes innovators differ from normal employees is they tend to deliberately collect and arrange the information relevant to the opportunities (Welter & Egmon, 2005). By this, innovators integrate their previous related knowledge that in time activate their understanding of the situations and therefore the opportunities.

Research on human brain suggest that opportunities recognition of innovator relate to cognitive capability (Bern, 2008). With MRI facilitation, Bern explain that innovator intentionally to imagine, try to understand aspects that can be developed from a new category. As for normal people, they tend to lethargic to see in new ways.

The combination between finding a new things, and integrating with the existing knowledge interest Gavetti, Levinthal, Rivkin (2005). They coin the term as *analogical reasoning*, that is facing the problem to be solved or new opportunities that should be capitalized with the imagining the other context that we have known the essential. This context then transferred from its original form to the unfamiliar context, bot related or not related to the opportunities.

These may suggest that, apart from cognitive element, idea generation also involves active element. For example, new ideas may be vague, unclear and may need testing such as meeting, simulation or experimentation (Hamel, 2007). A unique characteristic of idea generation element is that it highly involves in the next two stage; idea promotion and idea implementation. Next section details this.

The Complexity of Idea Promotion

For idea promotion stage, innovators need to gain sociopolitical support for his ideas (Janssen, 2005; Kanter, 1988b). This stage much relate to the persuasion skills and efforts. As the innovator doing this attempts, they also need to ensure the availability of resources they need which they can mobilize for each step of implementation. Amabile (1988) suggest at least they need time, skills and investment as resources to begin the initiative.

One resources that innovators should secure or sometimes become the output of idea promotion are the influence and the relationship with parties who determine the situation (Janssen, 2005). These parties may have power to decide and support the initiative and ensure parties needed to be involved in guarantee the progress of the initiative. For the purpose of getting support and sponsor from these parties, Kanter reminds the importance of “right moment” (Kanter, 1983, 1988a). Without these skills and the appropriate occasion, idea promotion potential to be failed. One thing that often overlooked in explaining the failure of idea promotion is the role of idea generation. In the first stage, idea generation involves producing unique idea. While in next stage – in idea promotion, idea generation has a role in producing unique approaches that innovator can use. Idea generation then have an important role in determining whether the approaches used in persuading colleagues or supervisor will be works or not.

The Complexity in Idea Implementation

In idea implementation stage, almost all of the skills and process required for succeeding idea promotion stages are needed. (Choi & Chang, 2009; Choi, Sung, Lee, & Cho, 2010).

Besides negotiating, convincing others, and tying the relationship with influencing parties, innovator need to show their ideas can be implemented. The more vary and extensive the audience of the ideas, the more valuable the ideas. For instance, new ideas for department and business unit is seen more valuable than new ideas that only applicable in the level of work unit. For these purposes, apart from the application, modification and routinizing are two other important things in idea implementation (2001). The success of these attempts are depend on the type of innovation involves. The more complex and original the innovation, the less possibilities the ideas to be experimented, and they become less adopted by relevant parties. This will lessen the potential success of its implementation (Damanpour & Scheider, 2008, p. 4).

As in idea promotion, there is no study that show the involvement of idea generation idea promotion stage. Innovators need new ideas when they attempt to approach parties that will ensure the availability of resources innovators need. The new ideas are needed in designing the best system or approach, both in the first attempts or later when modifications are required, when innovator forced to adapt the situations as it might be different from what initially expected. Considering the situations that may be changes in implementation phase of innovative ideas, the effort of idea promotions may recur when doing the idea implementation. This is possible due to parties that previously convinced change their mind, or innovator facing a new parties that had to be convinced. When this happen, innovators again, need idea generation again to creating a unique approach, so that the implementation can be succeed.

A New Perspectives in Seeing Inovative Behavior

Discussion on the complexity of idea promotion and implementation above, and the facts in the practical level that there is overlap and recurring process in innovation lead us to new perspectives on innovative behavior. Different from most common previous perspectives that seeing innovation as

a process, this new perspective suggest that there are a combination between recurring process and the overlapping stages. Describing this perspective is consistent with the view that IB is a multidimensional construct. As founded, all of three dimensions of IB is considered different each other, although there overlap between them (as indicated by the correlations). Idea generation could have an important role on the next stages (idea promotion and idea implementation), while idea promotion can be also has a role in idea implementation.

The Limitations of The Study

This study only use a single source as the information, that is self-rating from participants. Some studies claim this insufficient for innovation study (i.e Anderson et al., 2004), and further study need to have “double source rating”: *self-rating* employee, and self-rating of supervisor. Using these two sources will lessen the bias of “social desirability”, were participant tend to be seen appropriate in responding the survey. This bias will deceive mean and relationship score between variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The next limitation relates to the problem of SEM analysis used, particularly on the valuing the model fit. Experts on SEM are still arguing on the criteria in measuring the “goodness of fit” (Bentler, 2007). Although this study follows recommendation to use multiple fit indices, other researcher tend to use only the “exact fit index” (i.e. Barret, 2006). The accuracy of fit indices used is still controversial. Additionally, despite the results by indices used suggesting acceptable range, some of them are still below suggested value such as AVE for idea generation and implementation dimension.

Future Research Direction

As identified in limitation section, self-rating is inherently one issue in IB study, while depend only on supervisors rating is still bias as they may be rate the whole characteristics of employee, not only on innovation.

Future study should consider to evaluate the difference rating between parties closely related with the employee (colleague, subordinate, customer) should be considered. Secondly, further research needed to evaluate *convergent* and *divergent validity* of the scale used in this study to claim the “robustness” of its multidimensionality. Likewise further study should validate the scale using other related scales that have positive correlation with IB scale in general. The third future direction of research could be the usage of other variables as moderator that can explain IB. For instance, variable of employee hierarchy level that suggests different role, challenges and difficulties that response of innovation process (Ford & Collinson, 2011), that lead to more demanding process of innovation. Unsworth and Wall (2005) consider creativity is more required for employee in the higher position. On the other hand, employee in higher level of hierarchy has more experience in facing adversities. Empirical study needed to evaluate the contribution of these possibilities.

Managerial Implications

Understanding the IB stages as different dimension and measure may provide insight for manager, at least in two ways. First, it can facilitate manager to identify the distinguish skills of the employee. Employee also can used the similar information to identify their capacity on each of dimensions. Secondly, manager can develop training and development program specifically for each of dimensions. Specific and focus program have high potential to be effective and inform employee on how their capacity on the dimension.

In idea generation for instance, employee can focus evaluate themselves on acquiring ideas, persistence in getting the ideas or experimentation skills in order to ensure that their ideas are valid. Likewise one can more focus for idea promotion and idea implementation. For example, they could learn and focus in their effort to develop persuasion skills or facing the situations when they are experiencing the rejection.

6. Conclusion

Understanding innovative behavior is imperative for the success of organization and most studies show that IB is a uni-dimensional construct. However, at the practical level, some studies suggest that IB tend to be a multi-dimensional construct. Through confirmatory factor analysis, this study shows that the potential of IB as a multidimensional is occurred. Various analyses on indices used to test three model alternatives, including with the χ^2 different test and correlation value, this study support the notion that IB is multidimensional. Idea generation, promotion and implementation is distinguish concept or different each other.

Despite different each other, complexity of events that occurred for each dimension indicate the overlap between the dimensions. This discussion lead us to the new perspective where IB can be overlapped while the innovation process occurred. Idea generation not only limited in the first stage but arise and has a role in idea promotion and implementation. This new perspective provides a new direction of IB study and also managerial practice in managing IB. For instance, manager could specifically develop each of skills involved and needed to master doing the dimensions.

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